

20 and 31-34, of the above-identified application; and, accordingly, the obviousness-type double patenting rejections are improper.

Initially, the undersigned thanks the Examiner for the Interview courteously granted to the undersigned in connection with the above-identified application, attended by the undersigned and by an employee of the Assignee of the above-identified application.

During this Interview, the obviousness-type double patenting rejections over claims 1-20 of U.S. Patent No. 6,328,844 and over claims 1-26 of U.S. Patent No. 6,034,331 were discussed, and it was contended by the undersigned that such obviousness-type double patenting rejections were in error. Specifically, it was pointed out by the undersigned that only claims 1-6 of No. 6,328,844 were directed to an adhesive film, other claims in No. 6,328,844 being directed to a circuit board, a circuit connecting method and a method for manufacturing a circuit board. It was contended by the undersigned that consistent with the restriction requirement in the above-identified application, claims 7-26 of No. 6,328,844, directed to the circuit board, the circuit connecting method and the method for manufacturing a circuit board, were not appropriate for an obviousness-type double patenting rejection of the claims of the above-identified application directed to an adhesive film.

In connection with claims 1-6 of No. 6,328,844, during the Interview it was pointed out by the undersigned that these claims 1-6 recite a modulus of elasticity of the adhesive of the adhesive film; but would have neither taught nor would have suggested such adhesive film as in the present claims, including wherein such film contained insulative inorganic filler, especially in the amount recited in the present claims, and/or wherein the adhesive film has an average coefficient of thermal expansion after curing as in present claim 1 (and claims dependent thereon) or the

third adhesive layer has a coefficient of thermal expansion as in claim 6 (and claims dependent thereon). It was pointed out by the undersigned that by including the insulative inorganic filler and through use of the adhesive layer having the recited coefficient of thermal expansion, stress in the adhesive film used for bonding circuit members can be avoided.

During the Interview, the Examiner questioned as to whether No. 6,328,844 contained a description in the specification of a coefficient of thermal expansion or of an insulative inorganic filler. The undersigned emphasized that the claims of No. 6,328,844 did not include recitation of inorganic filler and of the coefficient of thermal expansion. Moreover, the undersigned indicated that an inorganic filler was disclosed in the paragraph bridging columns 4 and 5 of No. 6,328,844; and that in column 5, lines 3-5, of No. 6,328,844, it is disclosed that in order to lower the coefficient of thermal expansion, it is effective to mix in a larger quantity of inorganic filler. It was also noted by the undersigned that No. 6,328,844 goes on to describe, in this paragraph bridging columns 4 and 5 thereof, that if the inorganic filler is mixed in a too large quantity, the adhesive may be less adherent or may be made less removable at the joints, which causes faulty conduction; and if it is mixed in too small a quantity, the coefficient of thermal expansion cannot be made sufficiently low.

During the Interview, the undersigned noted that, in connection with U.S. Patent No. 6,034,331, claims 8-20 are directed to a connection structure, the present claims directed to an adhesive film being a separate patentable invention therefrom in view of the aforementioned restriction requirement in the above-identified application. The undersigned noted that the claims (especially claims 1-7) of No. 6,034,331, directed to a connection sheet, included first and second layers comprising, respectively, a molten first adhesive and a molten second adhesive, with

the molten second adhesive having a viscosity lower than that of the molten first adhesive. It was also pointed out by the undersigned that claim 5 of No. 6,034,331 recites that the first layer or the second layer or both comprise insulating particles. However, it was contended by the undersigned that No. 6,034,331, reciting molten first and second adhesives, would not have disclosed or suggested the adhesive film as in the present claims, including the insulative inorganic filler in amounts as in the present claims, or the (average) coefficient of thermal expansion recited therein, or combination of this (average) coefficient of thermal expansion with the insulative inorganic filler, and advantages thereof in connection with avoidance of stress.

During the Interview, it was pointed out to the Examiner that in the prior Office Action mailed September 27, 2005, claims 33 and 34 had been withdrawn from consideration; and that claims 33 and 34 did not include recitation of the average coefficient of thermal expansion. Claims 33 and 34 were considered on the merits in the Office Action mailed May 17, 2006, and do not recite average coefficient of thermal expansion.

No agreement was reached during the aforementioned Interview.

Applicants respectfully request reconsideration and withdrawal of the obviousness-type double patenting rejections over claims 1-26 of U.S. Patent No. 6,328,844, and over claims 1-20 of U.S. Patent No. 6,034,331.

With respect to all claims being considered on the merits in the above-identified application, other than claims 33 and 34, it is respectfully submitted that neither the subject matter claimed in claims 1-26 of No. 6,328,844, or the subject matter claimed in claims 1-20 of No. 6,034,331, would have disclosed or would have suggested the subject matter of the present claims, including, inter alia, wherein an adhesive layer of the adhesive film includes the insulative inorganic filler being

contained in an amount of from 10-200 parts by weight based on 100 parts by weight of the adhesive resin composition, and wherein the first adhesive layer of the adhesive film has an average coefficient of thermal expansion of 200ppm/°C or below at 110-130°C after curing or the third adhesive layer of the adhesive film has a coefficient of thermal expansion at 30° to 100°C of from 20 to 70ppm/°C. Note claim 1. See also claim 6.

In addition, in connection with claims 33 and 34, and in connection with the other claims being considered on the merits in the present application, it is respectfully submitted that the subject matter claimed in claims 1-26 of No. 6,328,844 and in claims 1-20 of No. 6,034,331 would have neither taught nor would have suggested such adhesive film having the insulative inorganic filler being contained in an amount of from 10-200 parts by weight based on 100 parts by weight of the adhesive resin composition.

Initially, as discussed during the Interview, it is respectfully submitted that subject matter of claims 7-26 of No. 6,328,844, directed to a circuit board, a circuit connecting method and a method for manufacturing a circuit board, are not relevant to the present claims, directed to an adhesive film, with respect to an obviousness-type double patenting rejection. In this regard, note the restriction requirement on page 2 of the Office Action mailed August 27, 2002, in the above-identified application, setting forth that claims directed to a circuit board and to a process for producing a circuit board are separate patentable inventions from claims directed to an adhesive or adhesive film.

Claims 1-6 of No. 6,328,844 are directed to an adhesive film for connecting circuits, wherein the adhesive thereof has a modulus of elasticity of from 100-2,000 MPa at 40°C after adhesion. Claims 4-6 of No. 6,328,844 recite that the

adhesive film has specified amounts of conductive particles dispersed in the adhesive. Claims 1-6, as well as claims 7-26, are silent with respect to additional components, such as insulative inorganic filler, in the adhesive film, and are silent with respect to any (average) coefficient of thermal expansion of an adhesive layer of the adhesive film. It is respectfully submitted that the subject matter claimed in claims 1-6 (or claims 7-26) of No. 6,328,844 would have neither taught nor would have suggested the adhesive film according to the present claims, including, inter alia, wherein the adhesive film includes a first adhesive layer having insulative inorganic filler contained therein, much less contained therein in amounts as in the present claims; and/or wherein the adhesive film has an (average) coefficient of thermal expansion as in various of the present claims, and advantages thereof in reduced stress as discussed previously.

As to the advantage of providing reduced stress, note, e.g., the paragraph bridging pages 2 and 3, the first full paragraph on page 3, the sole full paragraph on page 8, the second full paragraph on page 9, the sole full paragraph on page 10, and the first full paragraph on page 25, of Applicants' specification.

It is again noted that in column 5 of No. 6,328,844, reference is made to a coefficient of thermal expansion, and reference is also made therein to amounts of inorganic filler and effect thereof on coefficient of thermal expansion. Suffice it to say that the claims of No. 6,328,844 do not recite inclusion of inorganic filler, and also do not recite coefficient of thermal expansion. Emphasizing that in looking to the issue of obviousness-type double patenting, it is the claims that must be considered, clearly the claimed subject matter in No. 6,328,844 would have neither disclosed nor would have suggested the presently claimed subject matter, including the insulative inorganic filler, much less amount thereof, or combination of insulative inorganic

filler, in the specified amount, together with (average) coefficient of thermal expansion, and advantages of the present invention as to reduced stress, discussed previously.

Moreover, note that present claim 6 recites a multi-layer constitution including, inter alia, third and fourth adhesive layers which have physical properties different in value from each other, the third adhesive layer having a coefficient of thermal expansion at 30°-100°C of from 20-70ppm/°C, with at least one of the third and fourth adhesive layers including the insulative inorganic filler in the recited amount. It is respectfully submitted that the adhesive film claimed in claims 1-6 of No. 6,328,844, reciting the modulus of elasticity, would have neither taught nor would have suggested the multi-layer adhesive film as in present claim 6, having the specified coefficient of thermal expansion of the third adhesive layer and wherein at least one of the third and fourth adhesive layers has the insulative inorganic filler, and amounts thereof, as in present claim 6.

Even looking to claims 7-26 of No. 6,328,844, it is respectfully submitted that such claims would have neither disclosed nor would have suggested an adhesive film having the insulative inorganic filler, in amounts specified as in the present claims, and/or (average) coefficient of thermal expansion as in all claims other than claims 33 and 34, and advantages thereof, as discussed previously.

U.S. Patent No. 6,034,331 claims a connection sheet in claims 1-7, and claims a connection structure in claims 8-20. The connection sheet, as well as connection structure, includes a first layer comprising a molten first adhesive and a second layer comprising a molten second adhesive, the second layer being placed directly over the first layer and the molten second adhesive having a viscosity lower

than that of the molten first adhesive. Claim 5 of No. 6,034,331 recites that the first layer or the second layer or both comprise insulating particles.

Initially, again noting the restriction requirement in the above-identified application, it is respectfully submitted that the connection structure recited in claims 8-20 of No. 6,034,331 would have neither taught nor would have suggested the adhesive film of the present claims being considered on the merits. That is, in the present application, in the Office Action mailed August 27, 2002, the Examiner has concluded that the adhesive (film) is a separate patentable invention from the circuit board, and consistent therewith claims directed to the connection structure in claims 8-20 of No. 6,034,331 are directed to a separate patentable invention from the adhesive film of the present claims.

In any event, it is respectfully submitted that the subject matter of the claims of No. 6,034,331, that is, claims 1-7 and 8-20 thereof, would have neither taught nor would have suggested the connection film having an average coefficient of thermal expansion as in claim 1 or coefficient of thermal expansion as in claim 6; and would have neither disclosed nor would have suggested inclusion of insulative inorganic filler, contained in an amount as in claims 1, 6 and 33, or combination of both inclusion of insulative inorganic filler (in the specified amount) and (average) coefficient of thermal expansion, and advantages thereof in reducing stress.

It is again emphasized that No. 6,034,331 is concerned with providing adhesives with specified relative molten viscosities; and it is respectfully submitted that No. 6,034,331 does not disclose, nor would have suggested, a coefficient, or average coefficient, of thermal expansion, as in the present claims, much less advantages achieved thereby.

No. 6,034,331 discloses, in the specification thereof, that the first adhesive layer and/or the second adhesive layer preferably contains insulating particles; and that in the case where the insulating particles are contained, insulation between conducting particles or between a conducting particle and an electrode can be achieved with reliability when the electrodes are connected. See column 3, lines 51-57, of No. 6,034,331. Thus, No. 6,034,331 discloses including the insulating particles to ensure insulation between conducting particles or between a conducting particle and an electrode. Noting claims 5 of this patent, it is respectfully submitted that No. 6,034,331 would not have disclosed or would have suggested the inclusion of the insulative inorganic filler in amounts as in the present claims, providing the advantage of reduced stress as discussed previously.

The contention by the Examiner that the claims of each of No. 6,034,331 and of No. 6,328,844 are "encompassed by the claims of the application", as a basis for the obviousness-type double-patenting rejections, are noted. See the last paragraph on page 2, and first paragraph on page 3, of the Office Action mailed September 27, 2005, in the above-identified application. Initially, it is respectfully submitted that this is not the proper test for obviousness-type double patenting, the proper test being whether the subject matter of the claims of the patent would have taught or suggested the subject matter of the claims of the application.

In any event, Applicants respectfully traverse this contention by the Examiner. All of the present claims are limited as to amount of insulative inorganic filler, while the claims of the two applied patents are not so limited, and at least in this respect the claims of the patents are not encompassed by the claims of the application. Moreover, as the patent claims are not limited with respect to coefficient of thermal expansion, the claims of the patent are not encompassed by application claims 1-3,

5-9, 11, 12, 14, 16-20, 31 and 32 with respect to the coefficient of thermal expansion, also.

In view of the foregoing comments, reconsideration and withdrawal of each of the obviousness-type double patenting rejections, and allowance of all claims being considered on the merits in the above-identified application, are respectfully requested.

Applicants request any shortage of fees in connection with the filing of this paper be charged to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (case 1303.39636X00), and any excess fees should be credited to such Deposit Account.

Respectfully submitted,

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